CLAIMS

1. A method for identifying one or more tools for physiological analysis, comprising:

determining a relative measure of interaction between at least one species of a first mixture of species and at least first and second interacting components defining at least a first phase and a second phase, respectively, of a first partitioning system;

determining a relative measure of interaction between at least one species of a second mixture of species, corresponding to the species of the first mixture of species, and the first partitioning system;

determining a difference in the relative measure of interaction of the at least one species of the first mixture, versus the at least one corresponding species of the second mixture, with the first system; and

based upon the difference, (a) selecting the first partitioning system as a tool for determining a physiological condition of a biological system based upon determination of a relative measure of interaction between at least one species of a sample from the biological system and the first system, and/or (b) selecting the at least one species of the first mixture and the at least one corresponding species of the second mixture as a marker for determining a physiological condition of a biological system.

2. A method as in claim 1, wherein the method is carried out without determining the chemical or biological identity of either of the first or second species.

3. A method as in claim 1, wherein the first partitioning system is an aqueous multi-phase system.

4. A method as in claim 1, comprising selecting the first system as a tool for determining a physiological condition of a biological system based upon determination of a relative measure of interaction between at least one species of a sample from the biological system and the first system.

5. A method as in claim 1, comprising selecting the at least one species of the first mixture and the at least one corresponding species of the second mixture as a marker for determining a physiological condition of a biological system.

6. Wherein the first mixture of species and second mixture of species comprise a sample indicative of an abnormal condition and a control sample, both from a single organism.

7. A method as in claim 6, wherein the samples are taken from the organism at the same time.

8. A method as in claim 6, wherein the samples are taken from the organism at a different time.

9. A method as in claim 1, involving determining a difference in the relative measure of interaction of a single species of a first mixture versus a single, corresponding species of the second mixture in a single multi-phase system.

10. A method as in claim 1, comprising determining a difference in the relative measure of interaction of a single species of the first mixture versus a single species of the second mixture in both the first system and a different, second partitioning system.

11. A method as in claim 1, comprising determining a difference in the relative measure of interactions of a plurality of species of the first mixture versus a plurality of species of the second mixture in a single partitioning system.

12. A method as in claim 1, comprising determining differences in relative measures of interaction between a plurality of species of the first mixture versus a

plurality of species of the second mixture in the first partitioning system and at least one second, different partitioning system.

13. A method as in claim 1, comprising:

determining a relative measure of interaction between at least one species of the first mixture of species and at least first and second interacting components defining at least a first phase and a second phase, respectively, of a second system;

determining a relative measure of interaction between at least the corresponding species of the second mixture of species and the second system;

determining a difference in the relative measure of interaction of the at least one species of the first mixture, versus the at least one corresponding species of the second mixture, with the second system; and

based upon the difference, selecting the second system as a tool, in conjunction with the first system, for determining the physiological condition.

14. A method as in claim 1 comprising:

determining a relative measure of interaction between at least one species of the first mixture of species and at least first and second interacting components defining at least a first phase and a second phase, respectively, of a third system;

determining a relative measure of interaction between at least the corresponding species of the second mixture of species and the third system;

determining a lack of significant difference in the relative measure of interaction of the at least one species of the first mixture, versus the at least one corresponding species of the second mixture, with the third system; and

based upon the lack of significant difference, rejecting the third system as a tool for determining the physiological condition.

15. A method as in claim 1, wherein the at least one species of the first mixture of species is obtained from a biological system with a first physiological condition, and the at least one species of the second mixture of species which corresponds to the

species of the first mixture of species is obtained from the same biological system with a second physiological condition.

16. A method as in claim 1, wherein biological systems from which the first and second mixture of species are obtained represent the same individual member.

17. A method as in claim 1, whereas the biological systems from which the first and second mixtures of species are obtained represent the same species or organism but not the same individual member.

18. A method as in claim 1, wherein the first mixture is taken from a sample of a biological system having a first physiological condition, the method comprising:

determining a relative measure of interaction between at least a second species of the first mixture, obtained from the biological system, with the first physiological condition and at least the first and second interacting components of the first system;

determining a relative measure of interaction between at least a second species of the second mixture of species, corresponding to the second species of the first mixture of species, obtained from the biological system, with a second physiological condition, and the first system;

determining a difference in the relative measure of interaction of the at least one second species of the first mixture, versus the at least one second species of the second mixture, with the first system; and

denoting the difference associated with the at least one second species as a tool, in conjunction with the difference in the first species, for determining the differences between the physiological conditions of the first and second biological systems.

19. A method as in claim 18, comprising:

determining a relative measure of interaction between at least a third species of the first mixture of species, obtained from the biological system, and with the first physiological condition, and at least the first and second interacting components of

the first system;

determining a relative measure of interaction between at least the third species of the second mixture of species, obtained from the biological system, and with the second physiological condition, and the first system;

determining a lack of significant difference in the relative measure of interaction of the at least one third species of the first mixture, versus the at least one third species of the second mixture, with the first system; and

based upon the lack of significant difference, rejecting the third species as a tool for determining the differences between the physiological conditions of the first and second biological systems.

20. A method as in claim 1, wherein the at least one species of the first mixture of species and the at least one species of the second mixture of species are chemically identical.

21. A method as in claim 1, wherein following the selection of the marker as useful for determining the difference between physiological conditions, the measures of interaction corresponding to the physiological conditions of the marker are stored for later determination of an unknown sample as belonging to one of the physiological conditions.

22. A method as in claim 1, wherein the chemical identity of the first species and the corresponding species are identified.

23. A method as in claim 22, wherein the species and the corresponding species are identified a method different from the method of claim 1.

24. A method of determining a physiological condition of a biological system comprising:

determining a relative measure of interaction between at least a first species of a sample from a biological system, and at least first and second interacting components defining at least a first phase and a second phase, respectively, of a first partitioning system;

from the process of determining the relative measure of interaction between the first species and the first and second interacting components of the first partitioning system, determining the physiological condition of the biological system.

25. A method as in claim 24, wherein the first species is a first marker, and the first system was previously used in defining the marker, the method comprising:

comparing the relative measure of interaction of the marker from the sample with a relative measure of interaction of at least one marker from a different sample from the same biological system,

based on the degree of similarity between the interaction parameters, determining a physiological condition of the biological system.

26. A method as in claim 24, comprising comparing the relative measures of interaction of the first and second species with the first system with relative measures of interaction of first and second species of a control with the first system.

27. A method comprising:

determining a physiological condition of a biological system by determining a difference between at least a first marker of a sample from the biological system and a corresponding marker representative of a reference condition of the biological system, without knowledge of the chemical or biological identity of the first marker.

28. A method comprising:

determining a physiological condition of a biological system by determining a difference and/or similarity between a first property and/or value of a property associated with a marker obtained from the biological system and from the same marker from at least one sample with at least one reference condition,

wherein the marker was determined by:

determining a relative measure of interaction between at least one species of a first mixture of species and at least first and second interacting components defining at least a first phase and a second phase, respectively, of a first partitioning system;

determining a relative measure of interaction between at least one species of a second mixture of species, corresponding to the first species, and the first system;

defining the at least one species of the first mixture of species and the at least one species of the second mixture of species corresponding to the first species as the marker by denoting a difference between the relative measures of interaction of each of the species with the first partitioning system.

29. A method as in claim 28, wherein determining the physiological condition comprises determining a difference between a first property and/or value of a property associated with a first marker of a sample from the biological system and a set of corresponding markers representative of a set of reference conditions of the biological system.

30. A method as in claim 28, wherein determining the difference and/or similarity between a first property and/or value of a property associated with the first marker and the corresponding marker is performed by methods other than those used to determine the marker.

31. A method as in claim 28, wherein the at least one species of the first mixture of species is obtained from a biological system with a first physiological condition, and the at least one species of the second mixture of species which corresponds to the species of the first mixture of species is obtained from the same biological system with a second physiological condition.

32. A method as in claim 28, wherein at least one portion of the first mixture derives from an organism.

33. A method as in claim 28, wherein determining comprises exposing the marker obtained from the biological system and a corresponding marker each to a partitioning system.

34. A method as in claim 33, wherein the partitioning system is an aqueous multi-phase partitioning system.

35. A method as in claim 33, wherein the determination involving the multi-phase system includes determining a partition coefficient.

36. A method as in claim 28, wherein at least one relative measure of interaction includes binding of at least one species with a binding partner.

37. A method as in claim 28, wherein at least one of the first phase and the second phase of the system is aqueous.

38. A method as in claim 28, wherein each of the first phase and the second phase of the system are aqueous.

39. A method as in claim 28, wherein at least one of the first interacting component and the second interacting component comprises a polymer.

40. A method as in claim 28, wherein at least one of the first interacting component and the second interacting component comprises a salt.

41. A method as in claim 28, wherein at least one of the first interacting component and the second interacting component comprises a surfactant.

42. A method as in claim 28, wherein the at least one species of the first mixture of species is a biomolecule.

43. A method as in claim 42, wherein the at least one species of the first mixture of species is a protein.

44. A method as in claim 28, wherein at least one species is a suspected marker for a medical condition.

45. A method as in claim 28, comprising determining the physiological condition via, in addition to the criteria of claim 28, the use of additional information.

46. A method as in claim 45, wherein the additional information comprises one or more of blood pressure, temperature, and/or pulse rate.

47. A method as in claim 1, comprising denoting a plurality of species in the first mixture of species that contribute to a difference in partitioning characteristics of the first and second mixtures, thus denoting a plurality of markers.